

Claims

- [c1] 1. A night vision system for a vehicle comprising:
a first light source for illuminating a region proximate the vehicle, said light source operating at a first wavelength;
a pulsed second light source for illuminating a region forward of the vehicle, said second light source operating at a second wavelength and a first time period (T);
a light sensor for generating a timing signal in response to detecting light at approximately said second wavelength; and
a controller programmed to pulse said first light source between pulses of said second light source in response to said timing signal, and modify said first time period such that the next second light source pulse occurs at $T/2$ after said timing signal.
- [c2] 2. A night vision system according to claim 1 wherein said controller is programmed to pulse said first light source at a duty cycle less than 50% in response to said timing signal.
- [c3] 3. A night vision system according to claim 2 wherein said second light source pulse is advanced to occur at $T/2$

2 after said timing signal.

- [c4] 4. A night vision system according to claim 2 wherein said second light source pulse is delayed to occur at $T/2$ after said timing signal.
- [c5] 5. A night vision system according to claim 1 wherein said second light source also illuminates a region rearward of the vehicle.
- [c6] 6. A night vision system according to claim 5 wherein the light pulses of said second light source in the forward direction differ from the light pulses of said second light source in the rearward direction.
- [c7] 7. A night vision system for a vehicle comprising:
 - a first light source for illuminating a region proximate the vehicle, said light source operating at a first wavelength;
 - a pulsed second light source for illuminating a region forward of the vehicle, said second light source operating at a second wavelength and a first time period (T);
 - a light sensor for generating a timing signal in response to detecting light at approximately said second wavelength, said timing signal being indicative of another vehicle's second light source; and
 - a controller programmed to pulse said first light source

in response to said timing signal such that said pulse is centered around a time delay of T seconds after said timing signal.

- [c8] 8. A night vision system according to claim 7 wherein said controller is programmed to pulse said first light source at a duty cycle less than approximately 50% in response to said timing signal.
- [c9] 9. A night vision system according to claim 7 comprising a gated receiver for receiving light reflected off objects illuminated in said region by said first light source and generating a signal responsive to said received light.
- [c10] 10. A night vision system according to claim 7 wherein said controller is programmed to turn off first light source in response to said timing signal, modify said first time period of second light source, and synchronize said first and second light sources such that said first light source is off for a period of time relating to the periodic detection of the second wavelength of light.
- [c11] 11. A night vision system according to claim 7 wherein said first and second light sources are laser diodes, and said second light source is pulsed at a duty cycle less than 50%.
- [c12] 12. A night vision system according to claim 11 wherein

said light sensor is a photocell or photodiode.

[c13] 13. A night vision system according to claim 7 wherein said second light source also illuminates a region rearward of said vehicle.

[c14] 14. A night vision system according to claim 7 comprising a pulsed third light source for illuminating a region rearward of the vehicle, said third light source operating at a third wavelength and said first time period.

[c15] 15. A night vision system according to claim 9 comprising a display for imaging said receiver signal.

[c16] 16. A method for an active night vision system for a vehicle comprising:
activating a first light source to illuminate a region proximate the vehicle, said light source operating at a first wavelength;
pulse activating a second light source to illuminate a region forward of the vehicle, said second light source operating at a second wavelength and a first time period (T);
generating a timing signal in response to detecting light at approximately said second wavelength, said timing signal indicative of another vehicle's second light source;
and

pulse activating said first light source in response to said timing signal at a duty cycle less than 50%, said first light source pulses at a delay of T seconds after said timing signal.

- [c17] 17. A method according to claim 16 comprising advancing or delaying said second light source pulse to occur at a time $T/2$ seconds after said timing signal.
- [c18] 18. A method according to claim 16 comprising pulse activating said second light source to illuminate a region rearward of the vehicle.
- [c19] 19. A method according to claim 16 comprising generating an image signal in response to light reflected off objects illuminated in said region by said first light source.
- [c20] 20. A method according to claim 19 comprising displaying said image signal on a display within said vehicle.